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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/814,255	03/21/2001	Shunpei Yamazaki	07977-107002	5578
26171	7590	07/05/2006	EXAMINER	
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			ART UNIT	PAPER NUMBER
			2811	

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Please find below and/or attached an Office communication concerning this application or proceeding.

<p align="center">Office Action Summary</p>	Application No. 09/814,255	Applicant(s) YAMAZAKI ET AL.	
	Examiner Ori Nadav	Art Unit 2811	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 May 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 20 and 28-56 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 20 and 28-56 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 May 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 34-40 and 49-56 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. There is no support in the specification for a first side recessed portion and a second side recessed portion (i.e., two separate regions) being filled with one layer (the first layer).

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 34-56 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claimed limitation of the electrode contains a first layer and a second layer, as recited in claims 34, 41 and 49, is unclear as to which electrode applicant refers.

Claim Rejections - 35 USC § 102/103

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 20, 28, 31-32, 41-42 and 45-47, as best understood, are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Takafuji et al. (4,746,628).

Regarding claims 20, 41 and 47, Takafuji et al. teach in figure 10 and related text a semiconductor device having a thin film transistors the thin film transistor comprising:

a semiconductor layer 40 on an insulating surface 10, wherein the semiconductor layer has a side recessed portion 70;

a gate electrode 20 adjacent to the semiconductor layer with a gate insulating film 30 interposed there-between;

an interlayer insulating film 90 comprising silicon oxide over at least the gate electrode; and

an electrode 50, 70 over the interlayer insulating film, wherein the electrode is in contact with the semiconductor layer through a contact hole opened in the interlayer

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insulating film 90, wherein the electrode contains a first layer 70 and a second layer 50 and

wherein the side recessed portion is filled with the first layer 70.

Takafuji et al. do not teach a side recessed portion formed by overetching.

However, the claimed limitations of a side recessed portion formed by overetching are process limitations which would not carry patentable weight in this claim drawn to a structure, because distinct structure is not necessarily produced.

Note that a "product by process" claim is directed to the product per se, no matter how actually made, *In re Hirao*, 190 USPQ 15 at 17 (footnote 3). See also *In re Brown*, 173 USPQ 685; *In re Luck*, 177 USPQ 523; *In re Fessmann*, 180 USPQ 324; *In re Avery*, 186 USPQ 161; *In re Wertheim*, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); and *In re Marosi et al.*, 218 USPQ 289, all of which make it clear that it is the patentability of the final product per se which must be determined in a "product by process" claim, and not the patentability of the process, and that an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims or not. Note that the applicant has the burden of proof in such cases, as the above case law makes clear.

Regarding claims 28, 31-32, 42 and 45-46, Takafuji et al. teach in figure 10 and related text a semiconductor layer contains crystalline silicon, a second layer contains aluminum, wherein the electrode is a source electrode.

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Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 29-30 and 43-44, as best understood, are rejected under 35

U.S.C. 103(a) as being unpatentable over Takafuji et al. in view of Zhang et al. (5,313,075).

Takafuji et al. teach substantially the entire claimed structure, as applied to claims 20 and 41 above, except a first layer contains at least one selected from the group consisting of germanium, tin, gallium, zinc, lead, indium, and antimony, and an alloy of aluminum and germanium.

Zhang et al. teach that the semiconductor layer can be formed of silicon, germanium and silicon-germanium (column 15, lines 44-47).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to form the semiconductor layer of germanium and silicon-germanium in Takafuji et al.'s device, in order to improve the characteristics of the device.

Note that forming the semiconductor layer of germanium and silicon-germanium mean that layer 70 would comprise aluminum-germanium instead of aluminum-silicon, because the aluminum would react with the germanium instead of only the silicon.

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Claims 33 and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takafuji et al. in view of Applicant Admitted Prior Art (AAPA).

Takafuji et al. teach substantially the entire claimed structure, as applied to claims 20 and 41 above, except using the device as an active matrix type EL display device.

AAPA teaches using thin film device as an active matrix type EL display device.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use Takafuji et al.'s device as an active matrix type EL display device, in order to use the device in an application which requires an active matrix type EL display device.

Claims 34-35, 38-39, 49-50 and 53-55 as best understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Takafuji et al. in view of Davies et al. (5,712,501).

Regarding claims 34 and 49, Takafuji et al. teach substantially the entire claimed structure, as applied to claims 20 and 41 above, except the gate electrode has a second side recessed portion filled with the first layer and a wiring in contact with the gate electrode and containing a first layer and a second layer.

Davies et al. teach in figure 9 a semiconductor layer 13 has a side recessed portion 21 and a gate electrode 23 has a second side recessed portion 26, wherein the first and second side recessed portions are filled with a first layer 21, 26, and a wiring 26 in contact with the gate electrode.

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It would have been obvious to a person of ordinary skill in the art at the time the invention was made to form the gate electrode with a second side recessed portion filled with the first layer and a wiring in contact with the gate electrode and containing a first layer and a second layer in Takafuji et al.'s device, in order to reduce the contact resistance of the device, and in order to operate the device in its intended use by connecting wiring to the gate electrode.

Regarding claims 35, 38-39, 50 and 53-54, Takafuji et al. teach in figure 10 and related text a semiconductor layer contains crystalline silicon, a second layer contains aluminum, wherein the electrode is a source electrode.

Claims 36-37 and 51-52, as best understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Takafuji et al. and Davies et al., as applied to claims 34 and 49 above, and further in view of Zhang et al. (5,313,075).

Takafuji et al. and Davies et al. teach substantially the entire claimed structure, as applied to claims 34 and 49 above, except a first layer contains at least one selected from the group consisting of germanium, tin, gallium, zinc, lead, indium, and antimony, and an alloy of aluminum and germanium.

Zhang et al. teach that the semiconductor layer can be formed of silicon, germanium and silicon-germanium (column 15, lines 44-47).

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to form the semiconductor layer of germanium and silicon-

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germanium in Takafuji et al. and Davies et al.'s device, in order to improve the characteristics of the device.

Note that forming the semiconductor layer of germanium and silicon-germanium mean that layer 70 would comprise aluminum-germanium instead of aluminum-silicon, because the aluminum would react with the germanium instead of only the silicon.

Claims 40 and 56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takafuji et al. and Davies et al., as applied to claims 34 and 49 above, and further in view of Applicant Admitted Prior Art (AAPA).

Takafuji et al. and Davies et al. teach substantially the entire claimed structure, as applied to claims 34 and 49 above, except using the device as an active matrix type EL display device.

AAPA teaches using thin film device as an active matrix type EL display device.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use Takafuji et al. and Davies et al.'s device as an active matrix type EL display device, in order to use the device in an application which requires an active matrix type EL display device.

Response to Arguments

Applicant argues that there is support in the specification for a first side recessed portion and a second side recessed portion (i.e., two separate regions) being filled with one layer (the first layer), because amended figure 3C depicts a first side recessed

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portion and a second side recessed portion (i.e., two separate regions) being filled with layer 320.

Figure 3C depicts a first side recessed portion and a second side recessed portion (i.e., two separate regions) being filled with two separate layers. Said two layers are clearly distinct and physically separated from each other. The fact that applicant provides the same reference number for said two layer, does not make them one layer. Furthermore, although said two layers are formed by depositing layer 300, in further processing steps, layer 300 is etched to provide two separate and distinct layers.

Applicant argues that the claimed limitation of the electrode contains a first layer and a second layer, as recited in claims 34, 41 and 49, is clear, because "the electrode" is "the electrode" and not "the gate electrode".

A recitation of "gate electrode" can be followed by a recitation of "the electrode", wherein "the electrode" is being referred to the "gate electrode", because applicant is not required to provide the recitation of "the gate electrode" when referring to the gate electrode. Therefore, it is not clear that the phrase "the electrode" does not refer to the "gate electrode".

The rest of applicant's arguments with respect to claims 20 and 28-56 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ori Nadav whose telephone number is 571-272-1660. The examiner can normally be reached between the hours of 7 AM to 4 PM (Eastern Standard Time) Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lee can be reached on 571-272-1732. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'Ori Nadav', is positioned above the printed name.

O.N.
6/28/06

ORI NADAV
PRIMARY EXAMINER
TECHNOLOGY CENTER 2800